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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/945,171	08/30/2001	Howard J. Smith	476-2051	3257

7590 03/30/2005  
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EXAMINER

VARTANIAN, HARRY

ART UNIT PAPER NUMBER

2634

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

✓

<b>Office Action Summary</b>	<b>Application No.</b> 09/945,171	<b>Applicant(s)</b> SMITH ET AL.	
	<b>Examiner</b> Harry Vartanian	<b>Art Unit</b> 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 August 2001.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-14 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/2001</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 19, 24, 30, 36, and 50. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

2. The Abstract is objected to because of the following informalities: Please refrain from using Claim language such as "said" or "means" in the abstract. (SEE MPEP 608.01(b) Section "C. Language and Format")

Appropriate correction is required.

### ***Claim Objections***

3. Claims 3, 7-10 and 13-14 are objected to because of the following informalities:

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In Claim 3, it seems as though the "output of a detector" should be "the output of [[a]]**said** detectors".

In Claim 7, the preamble should read "[[the]]a gain/phase comparator coupled to the..."

The semicolon in the preamble of Claims 7 and 13 should be commas instead. Claims 8-10 and 14 are objected to for being dependent on an objected base claim.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5, 7, 9, 11 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Sahlman (US Patent Pub 2002/0048326). Sahlman discloses a power amplifier that uses a digital predistortion technique to reduce distortion(Abstract). In order for the predistorter to accurately replicate the error caused by the amplifier the invention uses a feedback loop to adaptively adjust(Fig 4). Sahlman uses error from the

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amplifier output to adjust the predistorter's gain and phase values(Paragraph 73).

Regarding Claim 1, Sahlman meets the following limitations:

switch means which alternately couples a first and second detector means to the input and output of said amplifier, the amplifier output being normalised to the amplifier input signal level and time aligned, **Fig 13, Para 4 and 0073**

difference means arranged to determine an error value corresponding to the difference between said amplifier input and output; **Fig 13, Para 4 and 0073**

digital signal processing means arranged to determine said error values as a function of said amplifier input signal level. **Fig 4, item 422**

Regarding Claim 2, Sahlman meets the following limitations:

wherein the difference means is a difference amplifier coupled to the outputs of said detectors. **Fig 13, item 1305**

Regarding Claim 3, Sahlman meets the following limitations:

comprising a DC offset applied to the output of a detector. **Para 0050**

Regarding Claim 4, Sahlman meets the following limitations:

wherein the output of each detector is coupled to the digital signal processing means and the difference means is implemented by the digital signal processing means. **Fig 4, item 422**

Regarding Claim 5, the applicant admits that the use a hybrid circuit for phase correction or adjustment is prior art on Pg 8, Lines 15-19.

Regarding Claim 7, the rejection for Claim 1 above meets the limitations of the Claim.

Regarding Claim 9, Sahlman discloses the use of a comparator that determines the amplifier output error for the predistorter in paragraphs 4 and 73.

Regarding Claims 11 and 13-14, the rejection for Claim 1 above meets the limitations of the Claim.

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5. Claims 1, 4-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Wessel et al(United States Patent# 6275685). Wessel et al discloses an identical invention wherein the amplitude and phase comparator in fig 1 is replaced by a gain and phase error detector. However, Wessel et al shows in figure 5 that the phase detector does in fact use a comparator(item 630) and the gain error uses a op-amp comparator(item 616). It should also be noted that amplitude error is functionally equivalent to gain error in scope.

Regarding Claims 1, 7, 11, 13, and 14 Wessel et al shows and describes a feedback loop system that detects phase and gain errors for better predistortion adaptation(Column 10, Lines 5-16).

Regarding Claim 2, Wessel et al describe the use of a difference signal 618 in the feedback loop.

Regarding Claim 4, Wessel et al describe the use of a DSP for error detection in the loop in Column 7, Lines 59-65.

Regarding Claim 5, the applicant admits that the use a hybrid circuit for phase correction or adjustment is prior art on Pg 8, Lines 15-19.

Regarding Claims 6, 8, and 12 Wessel et al describe the use averaging the error along the closed loop in Column 11, Line 49 to Column 12, Line 35.

Regarding Claim 9, Wessel et al describe the use of adaptive predistortion by using the results from a comparator in Column 7, Lines 34-65.

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Regarding Claim 10, Wessel et al discloses the use of buffer memory for calculating the correct adaptation values and a lookup table, i.e. secondary memory, for outputting the correct value(Column 9, Lines 30-61).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry Vartanian whose telephone number is 571.272.3048. The examiner can normally be reached on 10:00-6:30 Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571.272.3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Harry Vartanian

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Examiner  
Art Unit 2634

HV



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